

# Cal/Ecotox

## Toxicity Data for Brown Pelican (*Pelecanus occidentalis*)\*

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Chemical	Tox Exposure	Endpoint Type	Endpoint Description	Endpoint Value	Note	Reference
AROCLOR 1254; DDD (4,4'); DDE (4,4'); DDT (4,4');	0.017 ppm DDE, 0.016 ppm DDD, 0.020 ppm DDT, 0.005 ppm dieldrin, 0.196 ppm PCB 1254, wet wt	TOX-EXP IND - accumulation	mean residues in eggs	0.896 ppm DDE, 0.256 ppm DDD, 0.166 ppm DDT, 0.208 dieldrin, 2.241 ppm PCB 1254	a	1
ARSENIC COMPOUNDS; MERCURY COMPOUNDS; POLYCHLORINATED DIBENZO-P-DIOXINS; SELENIUM COMPOUNDS	geometric means: 0.03 ppm As, 0.38 ppm Se, 0.34 ppm Hg, 4.5 pg/g TCDD-EQs, wet wt in eggs	TOX-Non-Repro-Sublethal - genetic effects	half-peak coefficient of variation (HPCV) in DNA content vs. reference samples	no effect	b	2
DDD (4,4'); DDE (4,4'); DDT (4,4')	0.03 ppm DDT plus TDE, 0.12 ppm DDE, wet wt in anchovies	TOX-EXP IND - accumulation	concentration in egg contents	non-detectable DDT plus TDE, 96.6 ppm DDE, lipid wet basis	c	3
DDD (4,4'); DDE (4,4'); DDT (4,4')	0.03 ppm DDT plus TDE, 0.12 ppm DDE, wet wt in anchovies	TOX-REPRO - physiology	eggshell thickness (of intact or broken eggshells)	significantly decreased compared to pre-1943 samples	d	3
DDD (4,4'); DDE (4,4'); DDT (4,4')	0.03 ppm DDT plus TDE, 0.12 ppm DDE, wet wt in anchovies	TOX-REPRO - reproductive success	mean number of fledglings produced per nest in 1974	increased compared to positive control (1969 data)	e	3
DDE (4,4')	ND-100 ug/g in eggs	TOX-REPRO - physiology	critical threshold of DDE concentration in egg (wet wt basis) associated with 20% eggshell thinning level in eggs associated with impaired reproductive success (successful nests fledged at least one chick)	8 ug/g	f	4
DDE (4,4')	0.36-8.60 ppm, wet wt in eggs	TOX-REPRO - reproductive success	level in eggs associated with impaired reproductive success (successful nests fledged at least one chick)	3 ug/g	g	5
DDE (4,4')	ND-9 ug/g in eggs	TOX-REPRO - reproductive success	lowest level of DDE that would result in severely lowered reproductive success	3 ug/g	h	4
FUEL OILS	oil spill	TOX-REPRO - reproductive success	hatching success (proportion of eggs hatched per clutch) of oiled versus control eggs	decrease	i	6

### Notes

- a Adult; FL; F; Species - California (R)=*Pelecanus occidentalis*; TOX - Chemical=11097-69-1; TOX - Chemical=72-54-8; TOX - Chemical=72-55-9; TOX - Chemical=50-29-3; TOX - Chemical=60-57-1; N=29 eggs; east coast; Tox Exp Tech=diet; Tox Exp Dur=NR; Tox Study Dur=NR; Tox Stat Sig=NR
- b Chick; NC; NR; Species - California (R)=*Pelecanus occidentalis*; TOX - Chemical=ARSENIC COMPOUNDS; TOX - Chemical=MERCURY COMPOUNDS; TOX - Chemical=POLYCHLORINATED DIBENZO-P-DIOXINS; TOX - Chemical=SELENIUM COMPOUNDS; N=15; Ferry Slip Island and South Pelican Island (33deg59'N,77deg57'W); Tox Exp Tech=habitat contamination; Tox Exp Dur=NR; Tox Study Dur=one season; Tox Stat Sig=N; HPCV was used as an indicator of extent of somatic chromosomal damage.
- c Adult; CA; F; Species - California (R)=*Pelecanus occidentalis* (ssp. *californicus*); TOX - Chemical=72-54-8; TOX - Chemical=72-55-9; TOX - Chemical=50-29-3; N=39 eggs; Anacapa Island and Isla Coronado Norte; Tox Exp Tech=diet; Tox Exp Dur=NR; Tox Study Dur=NR; Tox Stat Sig=Y; see paper for 1970-1973 data
- d Adult; CA; F; Species - California (R)=*Pelecanus occidentalis* (ssp. *californicus*); TOX - Chemical=72-54-8; TOX - Chemical=72-55-9; TOX - Chemical=50-29-3; N=86 eggs; Anacapa Island and Isla Coronado Norte; Tox Exp Tech=diet; Tox Exp Dur=NR; Tox Study Dur=NR; Tox Stat Sig=Y; see paper for 1970-1973 data
- e Fledgling; CA; B; Species - California (R)=*Pelecanus occidentalis* (ssp. *californicus*); TOX - Chemical=72-54-8; TOX - Chemical=72-55-9; TOX - Chemical=50-29-3; N=1286 nests; Anacapa Island and Isla Coronado Norte; Tox Exp Tech=diet; Tox Exp Dur=NR; Tox Study Dur=NR; Tox Stat Sig=Y; see paper for 1970-1973 data
- f Embryo; CA; FL; LA; SC; B; Species - California (R)=*Pelecanus occidentalis*; TOX - Chemical=72-55-9; TOX - Dose-Response Data Format=DR Figure; N=813 eggs; Tox Exp Tech=diet; Tox Exp Dur=NR; Tox Study Dur=NR; Tox Stat Sig=NR
- g Juvenile; SC; B; Species - California (R)=*Pelecanus occidentalis*; TOX - Chemical=72-55-9; N=156 eggs; Tox Exp Tech=in ovo; Tox Exp Dur=NR; Tox Study Dur=NR; Tox Stat Sig=NR; DDT, DDD, PCB and dieldrin residues also present (see paper)
- h Embryo; CA; FL; LA; SC; B; Species - California (R)=*Pelecanus occidentalis*; TOX - Chemical=72-55-9; TOX - Dose-Response Data Format=DR Figure; N=156 eggs; Tox Exp Tech=diet; Tox Exp Dur=NR; Tox Study Dur=NR; Tox Stat Sig=NR
- i Embryo; NC; NR; Species - California (R)=*Pelecanus occidentalis*; TOX - Chemical=FUEL OILS; N=61-205 eggs; May-July; Cape Fear River; Tox Exp Tech=egg surface; Tox Exp Dur=NR; Tox Study Dur=3 mo.; Tox Stat Sig=Y

### References

- 1 Thompson, Neal P., Patrick W. Rankin, Patricia E. Cowan, Lovett E. Williams, Jr. and Stephen A. Nesbitt. 1977. Chlorinated hydrocarbon residues in the diet and eggs of the Florida brown pelican. Bull. Environ. Contam. Toxicol. 18(3):331-339.

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- 2 Wickliffe, J.K., and J.W. Bickham. 1998. Flow cytometric analysis of hematocytes from brown pelicans (*Pelecanus occidentalis*) exposed to planar halogenated hydrocarbons and heavy metals. Bull. Environ. Contam. Toxicol. 61:239-246.
- 3 Anderson, Daniel W., Joseph R. Jehl, Jr., Robert W. Risebrough, Leon A. Woods, Jr., Lawrence R. Deweese, and William G. Edgecomb. 1975. Brown pelicans: Improved reproduction off the southern California coast. Science. 190:806-808.
- 4 Blus, Lawrence J. 1984. DDE in birds' eggs: Comparison of two methods for estimating critical levels. Wilson Bull. 96(2):268-276.
- 5 Blus, Lawrence J. 1982. Further interpretation of the relation of organochlorine residues in brown pelican eggs to reproductive success. Environ. Pollut. Ser. A. 28(1):15-33.
- 6 Parnell, James F., Mark A. Shields and Dargan Frierson, Jr. 1984. Hatching success of brown pelican eggs after contamination with oil. Colon. Waterbirds. 7:22-24.

\* Cal/EPA, OEHHA and the University of California Regents are not responsible for damages of any kind resulting from the use of or reliance on information in this report. Users are encouraged to consult the original data. Updated: February 1999.